

Work Order ID 154573

Thursday, December 15, 2016 11:20:03 AM

154573

Page 1

Item ID: D209-669-013 Accept *N900040100* Setup Start *NS1*
 Revision ID: Stop *NS2*
 Item Name: AH-1F/P/S Skidtube LH with Standard Wearplates
 Start Date: 12/19/2016 Start Qty: 1.00 *1* Cust Item ID:
 Required Date: 1/5/2017 Req'd Qty: 1.00 *1* Customer:
 Reference:

Approvals: Process Plan: VS Date: 1/4/17 Tooling: _____ Date: _____ Run Start *NR1*
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D209-669-013	Rev B (DEO)								
DSI 9450	Rev A								
100	Document Control	0.00							
100	DOCUMENT CONTROL								
DC	Memo	0.00							
Doc.Control -USB or Paperwork	Photocopy bluefile & type labels per PPP d209-669-013 CHG004								
110	Pick Kit	0.00							
110									
Packaging	Memo	0.00							
Packaging									

0154582

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval		
Description Work Order Deviation				Disposition					
Root Cause		FAULT CATEGORY							
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐				
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐				
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐				
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐				
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐				
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐				
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐				
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐				
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐				
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐				
Past Expiry Date ☐	Manufacturing Process ☐	OTHER :							
Misidentified ☐	Past Due ☐								

Work Order ID 154573

Thursday, December 15, 2016 11:20:03 AM

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Page 2

Item ID: D209-669-013

Accept

N900040100

Setup Start

NS1

Revision ID:

Stop

NS2

Item Name: AH-1F/P/S Skidtube LH with Standard Wearplates

Start Date: 12/19/2016 Start Qty: 1.00 ***1***

Cust Item ID:

Required Date: 1/5/2017 Req'd Qty: 1.00 ***1***

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start

NR1

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop

NR2

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
120	QC4- 100% Inspect kits for completeness	0.00							
120									
QC	Memo	0.01							
Quality Control									
130	Packaging	0.00							
130									
Packaging	Memo	0.00							
Packaging	Identify and pack for shipping as per PPPD209-669-013 Location: _____								
140	QC21- Final Inspection - Work Order Release	0.00							
140									
QC	Memo	0.02							
Quality Control									

JAN 23 2017

JAN 23 2017

JAN 24 2017

ME
17-1-24

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

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Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
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Root Cause				FAULT CATEGORY			
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐		
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐		
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐		
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐		
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐		
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐		
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Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐		
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Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐		
Past Expiry Date ☐	Manufacturing Process ☐	OTHER : _____					
Misidentified ☐	Past Due ☐						

Thursday, December 15, 2016 11:20:07 AM

154573

D209-669-013

Required Date: 1/5/2017

Required Qty: 1.00

Comments: New IPP 08.02.13 LL, verified by:DD
IPP Rev:B 08-05-20 chg QTY of D2570 DD verified by: IPP REV:C
12.06.07 ECN 12-599 DD VERF:EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D209-669-043		Manufactured	No			110	Each	0.0000	1	1			
D209-669-043													
AH-1F/P/S Replacement Skidtube with Standard Wearplates, Fits LH or RH													
D2917-1		Manufactured	No			110	Each	0.0000	2	2			
D2917-1													
Saddle LH													
D2918-1		Manufactured	No			110	Each	1.0000	2	2			
D2918-1													
Saddle LH													
					<u>Location</u>		<u>Loc Qty</u>		<u>Loc Code</u>				
					ST406		1						
					141669		1						
AN4-51A		Purchased	No			110	Each	132.0000	8	8			
AN4-51A													
Bolt													
					<u>Location</u>		<u>Loc Qty</u>		<u>Loc Code</u>				
					FG		5						
					122993		5						
					over003		50						
					m136301		50						
					over004		24						
					m135158		24						
					ST340		53						
					m135706		3						
					m135766		50						

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Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐				
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐				
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐				
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐				
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐				
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐				
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐				
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐				
Past Expiry Date ☐	Manufacturing Process ☐	OTHER : _____							
Misidentified ☐	Past Due ☐								

Picklist Print

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Work Order ID: 154573

154573

Parent Item: D209-669-013

D209-669-013

Parent Item Name: AH-1F/P/S Skidtube LH with Standard Wearplates

Start Date: 12/19/2016

Required Date: 1/5/2017

Start Qty: 1.00

Required Qty: 1.00

D2570

Manufactured No

110

Each

212.0000

24

24

D2570

Bushing

**

DAS 6 9-89

DAS 28 9-89

JAN 10 2017

Location

Loc Qty

Loc Code

FG

12

88781

12

FP001

31

147395

16

150641

15

ST008

169

145728

2

148174

25

150641

142

24

MS21042L4

Purchased

No

110

Each

2,530.000

24

24

MS21042L4

Nut

**

DAS 6 9-89

DAS 28 9-89

JAN 10 2017

Location

Loc Qty

Loc Code

FP001

18

m133363

18

GA

192

m135058

192

OVER007

1500

m136182

500

m136295

1000

ST303

820

m135864

320

m135979

500

24

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WORK ORDER NON-CONFORMANCE / UPDATE

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Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
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Past Expiry Date ☐	Manufacturing Process ☐	OTHER : _____							
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Thursday, December 15, 2016 11:20:08 AM

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Work Order ID: 154573

154573

Parent Item: D209-669-013

D209-669-013

Parent Item Name: AH-1F/P/S Skidtube LH with Standard Wearplates

Start Date: 12/19/2016

Required Date: 1/5/2017

Start Qty: 1.00

Required Qty: 1.00

AN5-36A Purchased No

110

Each

126.0000

4

4

AN5-36A

Bolt

**

DAS
6
9-89

DAS
28
9-89

JAN 09 2017

Location

Loc Qty

Loc Code

over004

100

M136150

100

ST336

26

M135774

26

NAS1149D0563J Purchased No

110

Each

1,291.000

8

8

NAS1149D0563.J

Washer

**

DAS
C
JAN 09 2017

DAS
28
9-89

Location

Loc Qty

Loc Code

GA

681

m136295

681

ST263

610

m135470

3

m135774

607

MS21042L5 Purchased No

110

Each

371.0000

4

4

MS21042L5

Nut

**

DAS
6
9-89

DAS
28
9-89

Location

Loc Qty

Loc Code

GA

21

m127813

21

ST303

350

m135297

2

m135774

48

m136047

200

m136295

100

JAN 09 2017

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DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date : _____		Step #: _____		QTY Effective : _____			MRB (QSI042) Approval Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval		
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Root Cause		FAULT CATEGORY							
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐				
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Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐				
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154573

Parent Item: D209-669-013

D209-669-013

Parent Item Name: AH-1F/P/S Skidtube LH with Standard Wearplates

Start Date: 12/19/2016

Required Date: 1/5/2017

Start Qty: 1.00

Required Qty: 1.00

AN4-7A Purchased No 110 Each 136.0000 16 16

AN4-7A

Bolt

**

JAN 09 2017

DAS 6 9-89

DAS 28 9-89

68-6
LZ
DAS

Location

Loc Qty

Loc Code

ST345

136

m134249

3

m134754

33

m136192

100

NAS1149D0463J Purchased No

No

110

Each

4,058.000

32

32

NAS1149D0463.J

Washer

**

JAN 09 2017

DAS 6 9-89

DAS 28 9-89

DAS 27 9-89

Location

Loc Qty

Loc Code

GA

80

M134508

13

M135056

67

ST260a

2200

M136192

600

M136263

600

M136406

1000

ST263

1778

M135671

3

M135948

175

M136044

1600

D2929 Manufactured No

No

110

Each

63.0000

2

2

D2929

Spacer

**

JAN 09 2017

DAS 6 9-89

DAS 28 9-89

DAS 27 9-89

Location

Loc Qty

Loc Code

Mezz

63

53564

19

84944

44

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

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Parent Item: D209-669-013

D209-669-013

Parent Item Name: AH-1F/P/S Skidtube LH with Standard Wearplates

Start Date: 12/19/2016

Required Date: 1/5/2017

Start Qty: 1.00

Required Qty: 1.00

D2930 Manufactured No

110 Each

14.0000

2 2

D2930

Spacer

**

DAS 6 28 9-89
JAN 09 2017

DAS 28 9-89

DAS 27 9-89

Location

Loc Qty

Loc Code

Mezz

14

53563

14

D3405-041

Manufactured No

110 Each

29.0000

1 1

D3405-041

Ground Handling Lug

**

DAS 6 28 9-89
JAN 09 2017

DAS 28 9-89

DAS 27 9-89

Location

Loc Qty

Loc Code

st529

19

147912

9

150833

10

ST546A

10

151325

10

AN4C47A

Purchased No

110 Each

52.0000

4 4

AN4C47A

Bolt

**

DAS 6 28 9-89
JAN 09 2017

DAS 28 9-89

DAS 27 9-89

Location

Loc Qty

Loc Code

FG

10

122491

10

ST341

42

m135054

2

m135586

16

m136269

24

3 1

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WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

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Work Order: _____		DISPOSITION		AGAINST DEPARTMENT/PROCESS					
Part No. _____		Rework ☐		Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐		
NCR No. _____		Scrap ☐		Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐		
		Use-as-is ☐		Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐		
		Suspected Unapproved ☐		Large Fab ☐	Composite ☐	Supplier ☐			
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval		
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				Lead hand / Supervisor Approval Verification					
				QC / QA Coordinator Approval					
Root Cause		FAULT CATEGORY							
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐				
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐				
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐				
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐				
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐				
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐				
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐				
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐				
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐				
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐				
Past Expiry Date ☐	Manufacturing Process ☐	OTHER :							
Misidentified ☐	Past Due ☐								

Picklist Print

Thursday, December 15, 2016 11:20:08 AM

Page 6

Work Order ID: 154573

154573

Parent Item: D209-669-013

D209-669-013

Parent Item Name: AH-1F/P/S Skidtube LH with Standard Wearplates

Start Date: 12/19/2016

Required Date: 1/5/2017

Start Qty: 1.00

Required Qty: 1.00

MS21043-4

Purchased

No

110

Each

1,392.000

5

5

MS21043-4

Nut

**

Location

Loc Qty

Loc Code

FG	40	
104603	40	
GA	17	
m132803	17	
OVER007	900	
m136192	300	
m136263	300	
m136406	300	
ST302	435	
m135600	35	
m136148	400	

JAN 09 2017

DAS 27 9-89

DAS 27 9-89

D3405-043

Manufactured

No

110

Each

44.0000

1

1

D3405-043

Ground Handling Lug

**

Location

Loc Qty

Loc Code

st529	24	
147906	2	
148665	10	
152065	12	
ST546A	20	
150832	10	
151326	10	

JAN 09 2017

DAS 27 9-89

DAS 27 9-89

Thursday, December 15, 2016 11:20:08 AM

Shop Packet Print

Page 6

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐																																																													
Date : _____		Step #: _____		QTY Effective : _____			MRB (QSI042) Approval																																																										
Description Work Order Deviation				Disposition				Completed By																																																									
								Lead hand / Supervisor Approval Verification																																																									
								QC / QA Coordinator Approval																																																									
Root Cause		FAULT CATEGORY																																																															
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐	Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐	Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐	Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐	Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐	Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐	Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐	Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐	LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐	Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐	Past Expiry Date ☐	Manufacturing Process ☐	OTHER : _____			
Misidentified ☐	Past Due ☐																																																																

Picklist Print

Thursday, December 15, 2016 11:20:08 AM

Page 7

Work Order ID: 154573

154573

Parent Item: D209-669-013

D209-669-013

Parent Item Name: AH-1F/P/S Skidtube LH with Standard Wearplates

Start Date: 12/19/2016

Required Date: 1/5/2017

Start Qty: 1.00

Required Qty: 1.00

D3407-041 Manufactured No

110

Each

14.0000

1

1

D3407-041

Tow Ring

**

JAN 09 2017

DAS 28
6 9-89

Location

Loc Qty

Loc Code

st530

14

151900

10

152812

4

D3456-1 Manufactured No

110

Each

88.0000

1

1

D3456-1

Washer

**

JAN 09 2017

DAS 28
6 9-89

Location

Loc Qty

Loc Code

FG

7

25701

7

ST037

31

151938

31

ST038A

50

152842

50

D3417-5 Manufactured No

110

Each

124.0000

2

2

D3417-5

Washer

**

JAN 09 2017

DAS 28
6 9-89

Location

Loc Qty

Loc Code

ST035

84

149255

3

152860

81

ST038A

40

151493

40

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date : _____		Step #: _____		QTY Effective : _____			MRB (QSI042) Approval Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval		
Description Work Order Deviation				Disposition					
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐		OTHER : _____					

DART SERVICE INSTRUCTION

TO AMEND INSTALLATION INSTRUCTIONS IIN-D209-669 REV. B

INSTRUCTIONS:

- 1) FOR D209-669-011/-012/-013/-014 SKID TUBES @ CHANGE 003 AND SUBSEQUENT, MODIFY THE FOLLOWING:
- a) REPLACE THE D2968-041 TOW RING WITH THE D3407-041 TOW RING ASSEMBLY.
 - b) REPLACE THE D2736-1 AND D2736-3 GHW LUGS WITH THE D3405-041 AND D3405-043 LUG ASSEMBLIES.
 - c) AMEND THE PARTS LIST IN SECTION 5.0 OF INSTALLATION INSTRUCTIONS IIN-D209-669 REV. B AS SHOWN ON PAGE 2 OF THIS DSI.

NOTE: ALL INSTALLATION FASTENERS FOR THE ABOVE CHANGES HAVE BEEN UPDATED. SEE THE AMENDED PARTS LIST ON PAGE 2 FOR DETAILS.

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 154573

10/12/15

20160203

SH 141227

A	NEW ISSUE	AJS	09.02.24
REV.	DESCRIPTION	BY	DATE
DESIGN	AJS	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	AJS		
CHECKED		DRAWING NO.	REV. A
MFG. APPR.	N/A	DSI 9450	SHEET 1 OF 3
APPROVED		TITLE	SCALE
DE APPR.		SKIDTUBE INSTALLATIONS	NTS
DATE	09.02.24		

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DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :				MRB (QSI042) Approval	
Description Work Order Deviation				Disposition				Completed By	
								Lead hand / Supervisor Approval Verification	
								QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY							
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐				
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐				
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐				
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐				
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐				
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐				
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐				
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐				
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐				
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐				
Past Expiry Date ☐	Manufacturing Process ☐	OTHER : _____							
Misidentified ☐	Past Due ☐								

5.0 PARTS LIST

ITEM	QTY -011	QTY -012	QTY -013	QTY -014	QTY -041	QTY -043	PART NUMBER	DESCRIPTION
	X						D209-669-011	SKIDTUBE INSTALLATION, LH (AH-1W/J)
		X					D209-669-012	SKIDTUBE INSTALLATION, RH (AH-1W/J)
			X				D209-669-013	SKIDTUBE INSTALLATION, LH (AH-1P/F/S)
				X			D209-669-014	SKIDTUBE INSTALLATION, RH (AH-1P/F/S)
	1	1			X		D209-669-041	REPLACEMENT SKIDTUBE (AH-1W/J)
			1	1		X	D209-669-043	REPLACEMENT SKIDTUBE (AH-1P/F/S)

IS:

50	4	4	1	1			D3405-041	LUG ASSEMBLY
51	8	8	4	4			AN4C47A	BOLT
52	16	16	8	8			D2570	BUSHING
53	8	8	4	4			MS21043-4	NUT
54			1	1			D3405-043	LUG ASSEMBLY
60	1	1	1	1			D3407-041	TOW RING ASSEMBLY
61	1	1	1	1			D3456-1	WASHER
62	1	1	1	1			MS21043-4	NUT
63	2	2	2	2			D3417-5	WASHER

WAS:

50	4	4	1	1			D2736-1	GHW LUG
51	8	8	4	4			AN4-46A	BOLT
52	16	16	8	8			D2570	BUSHING
53	8	8	4	4			MS21042L4	NUT (OR MS21042-4)
54			1	1			D2736-3	GHW LUG
60	1	1	1	1			D2968-041	TOW RING
61	1	1	1	1			AN970-4	WASHER
62	1	1	1	1			MS21042L4	NUT (OR MS21042-4)

DESIGN	AJS	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	DRAWING NO. REV. A DSI 9450 SHEET 2 OF 3
DRAWN	AJS		
CHECKED		TITLE SCALE SKIDTUBE INSTALLATIONS NTS	
MFG. APPR.	N/A		
APPROVED	JAN	COPYRIGHT © 2009 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON OR ENTITY WITHOUT THE WRITTEN PERMISSION OF DART AEROSPACE LTD.	
DE APPR.			
DATE	09.02.24		

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

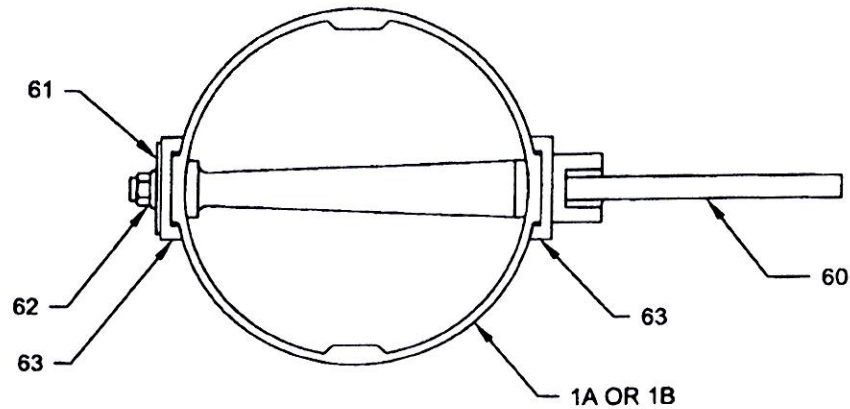
QA Closed: _____ Date: _____

Work Order update only ☐

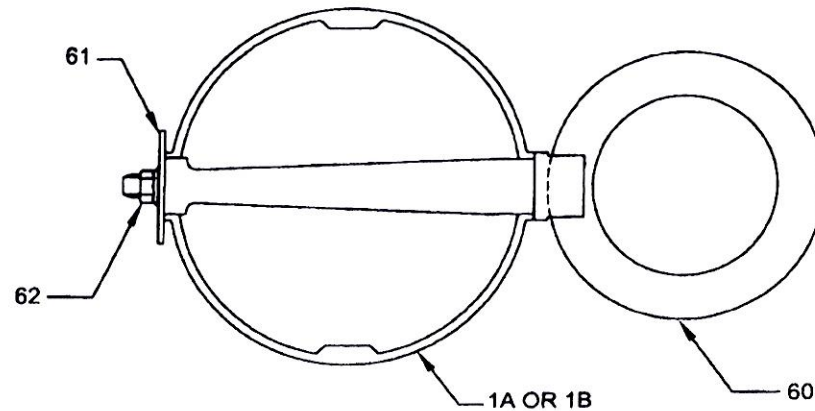
Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval		
Description Work Order Deviation				Disposition					
Root Cause		FAULT CATEGORY							
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐				
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐				
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐				
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐				
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐				
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐				
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐				
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐				
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐				
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐				
Past Expiry Date ☐	Manufacturing Process ☐	OTHER : _____							
Misidentified ☐	Past Due ☐								

INSTALL TOW RING ASSEMBLY AS SHOWN BELOW (REFER TO SECTION F-F OF IIN-D209-669 REV. B.

IS:



WAS:



NO PICTORIAL CHANGE REQUIRED FOR GROUND HANDLING WHEEL LUG CHANGES.

DESIGN	AJS	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	AJS		
CHECKED		DRAWING NO.	REV. A
MFG. APPR.	N/A	DSI 9450	SHEET 3 OF 3
APPROVED		TITLE	SCALE
DE APPR.		SKIDTUBE INSTALLATIONS	NTS
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DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :				MRB (QSI042) Approval Completed By _____ Lead hand / Supervisor Approval Verification _____ QC / QA Coordinator Approval _____	
Description Work Order Deviation				Disposition					
Root Cause		FAULT CATEGORY							
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐				
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐				
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐				
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐				
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐				
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐				
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐				
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐				
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐				
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐				
Past Expiry Date ☐	Manufacturing Process ☐	OTHER : _____							
Misidentified ☐	Past Due ☐								

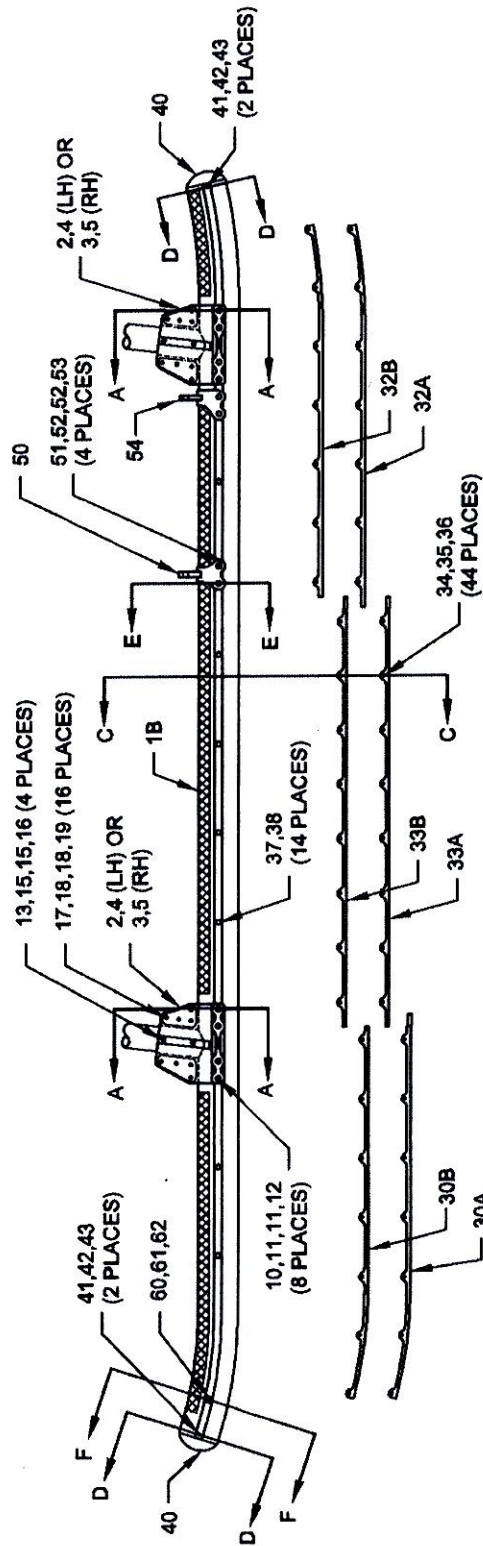


Figure 3 – D209-669-013/-014 Skidtube Installation (AH-1F/P/S)

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Revision: **B**

Date: 07.08.23

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐																																																													
Date :		Step #:		QTY Effective :				MRB (QSI042) Approval																																																									
Description Work Order Deviation				Disposition				Completed By																																																									
								Lead hand / Supervisor Approval Verification																																																									
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Root Cause		FAULT CATEGORY																																																															
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐	Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐	Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐	Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐	Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐	Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐	Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐	Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐	LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐	Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐	Past Expiry Date ☐	Manufacturing Process ☐	OTHER : _____			
Misidentified ☐	Past Due ☐																																																																

4.0 WEIGHT AND BALANCE

The following weight and balance information is for the replacement Dart parts. The weight and balance of the skidtubes that are being removed from the aircraft is the responsibility of the installer.

Installation	Weight	LONGITUDINAL	
		Arm	Moment
D209-669-011/-012	49.6 lb	170.4 in	8452 in lb
SKIDTUBE INSTALLATION	22.5 kg	4.33 m	97.4 m kg
D209-669-013/-014	43.8 lb	176.5 in	7731 in lb
SKIDTUBE INSTALLATION	19.9 kg	4.48 m	89.2 m kg

5.0 PARTS LIST

Item	Qty -011	Qty -012	Qty -013	Qty -014	Qty -041	Qty -043	Part Number	Description
	X						D209-669-011	SKIDTUBE INSTALLATION, LH (AH-1W/J)
		X					D209-669-012	SKIDTUBE INSTALLATION, RH (AH-1W/J)
			X				D209-669-013	SKIDTUBE INSTALLATION, LH (AH-1P/F/S)
				X			D209-669-014	SKIDTUBE INSTALLATION, RH (AH-1P/F/S)
	1	1			X		D209-669-041	REPLACEMENT SKIDTUBE (AH-1W/J)
			1	1		X	D209-669-043	REPLACEMENT SKIDTUBE (AH-1P/F/S)
1A					1		D2906-041	SKIDTUBE ASSEMBLY
1B						1	D2906-043	SKIDTUBE ASSEMBLY
2	1		2				D2917-1	OUTER SADDLE (FWD, LH)
3		1		2			D2917-2	OUTER SADDLE (FWD, RH)
4	1		2				D2918-1	INNER SADDLE (FWD, LH)
5		1		2			D2918-2	INNER SADDLE (FWD, RH)
6	1						D2919-1	OUTER SADDLE (AFT, LH)
7		1					D2919-2	OUTER SADDLE (AFT, RH)
8	1						D2920-1	INNER SADDLE (AFT, LH)
9		1					D2920-2	INNER SADDLE (AFT, RH)
10	8	8	8	8			AN4-51A	BOLT
11	16	16	16	16			D2570	BUSHINGS
12	8	8	8	8			MS21042L4	NUT (OR MS21042-4)
13	2	2	4	4			AN5-36A	BOLT
14	2	2					AN5-41A	BOLT
15	8	8	8	8			AN960JD516	WASHER
16	4	4	4	4			MS21042L5	NUT (OR MS21042-5)
17	16	16	16	16			AN4-7A	BOLT
18	32	32	32	32			AN960JD416	WASHER
19	16	16	16	16			MS21042L4	NUT (OR MS21042-4)

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Revision: **B**

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CONTINUED FROM PREVIOUS PAGE

20	2	2	2	2			D2929	SPACER
21	2	2	2	2			D2930	SPACER
*30A					1	1	D3564-9	WEARSHOE (REPLACES D2577-1)
*30B					1	1	D3566-1	GASKET
*31A					1		D3564-15	WEARSHOE (REPLACES 18" D2577-5)
*31B					1		D3566-15	GASKET
*32A					1	1	D3564-11	WEARSHOE (REPLACES D2577-3)
*32B					1	1	D3566-1	GASKET
*33A					1	1	D3564-5	WEARSHOE (REPLACES D2577-5)
*33B					1	1	D3566-5	GASKET
*34					50	44	AN3C4A	BOLT (REPLACES AN3-4A)
*35					50	44	AN960C10L	WASHER (REPLACES AN960JD10L)
*36					50	44	AKS7-1032-130	INSERT (OR ALS7-1032-130, OR ALS4-1032-130, OR AKS4-1032-130)
*37					12	14	D2594-1	PLUG
*38					12	14	D2594-3	O-RING
*40					2	2	D2855	AFT CAP
*41					4	4	AN3-5A	BOLT
*42					4	4	AN960JD10L	WASHER
*43					4	4	AKS7-1032-225	INSERT (OR ALS7-1032-225, OR ALS4-1032-225, OR AKS4-1032-225)
50	4	4	1	1			D2736-1	GHW LUG
51	8	8	4	4			AN4-46A	BOLT
52	16	16	8	8			D2570	BUSHING
53	8	8	4	4			MS21042L4	NUT (OR MS21042-4)
54			1	1			D2736-3	LUG ASSEMBLY
60	1	1	1	1			D2968-041	TOW RING
61	1	1	1	1			AN970-4	WASHER
62	1	1	1	1			MS21042L4	NUT (OR MS21042-4)

* DENOTES THAT PART IS INCLUDED WITH D2906-041/-043 SKIDTUBE ASSEMBLY

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Revision: B

Date: 07.08.23

REFERENCE ONLY

5.0 PARTS LIST

ITEM	QTY -011	QTY -012	QTY -013	QTY -014	QTY -041	QTY -043	PART NUMBER	DESCRIPTION
	X						D209-669-011	SKIDTUBE INSTALLATION, LH (AH-1W/J)
		X					D209-669-012	SKIDTUBE INSTALLATION, RH (AH-1W/J)
			X				D209-669-013	SKIDTUBE INSTALLATION, LH (AH-1P/F/S)
				X			D209-669-014	SKIDTUBE INSTALLATION, RH (AH-1P/F/S)
	1	1			X		D209-669-041	REPLACEMENT SKIDTUBE (AH-1W/J)
			1	1		X	D209-669-043	REPLACEMENT SKIDTUBE (AH-1P/F/S)

IS:

50	4	4	1	1			D3405-041	LUG ASSEMBLY
51	8	8	4	4			AN4C47A	BOLT
52	16	16	8	8			D2570	BUSHING
53	8	8	4	4			MS21043-4	NUT
54			1	1			D3405-043	LUG ASSEMBLY
60	1	1	1	1			D3407-041	TOW RING ASSEMBLY
61	1	1	1	1			D3456-1	WASHER
62	1	1	1	1			MS21043-4	NUT
63	2	2	2	2			D3417-5	WASHER

WAS:

50	4	4	1	1			D2736-1	GHW LUG
51	8	8	4	4			AN4-46A	BOLT
52	16	16	8	8			D2570	BUSHING
53	8	8	4	4			MS21042L4	NUT (OR MS21042-4)
54			1	1			D2736-3	GHW LUG
60	1	1	1	1			D2968-041	TOW RING
61	1	1	1	1			AN970-4	WASHER
62	1	1	1	1			MS21042L4	NUT (OR MS21042-4)

DESIGN	AJS	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	AJS		
CHECKED		DRAWING NO.	REV. A
MFG. APPR.	N/A	DSI 9450	SHEET 2 OF 3
APPROVED		TITLE	SCALE
DE APPR.		SKIDTUBE INSTALLATIONS	NTS
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